Space Weather Forecast

Issued on Thursday, 18 November 2021 at 12:59 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of minor geomagnetic storms later in the UTC weekend.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was very low over the last 24 hours, with no significant X-ray flare activity observed. There are two active sunspot regions on the Earth-facing side of the sun: both small, stable and magnetically unipolar (all implying significant activity is unlikely).

A possible 'filament' (arc of plasma) became mobile at low solar latitudes near the middle of sun around 17/2000UTC (seen in extreme UV satellite imagery). This event was not apparent in ground-based Earth observatory imagery, and as yet this event has not manifested in any other imagery. No Earth-directed Coronal Mass Ejections (CMEs) have therefore been observed.

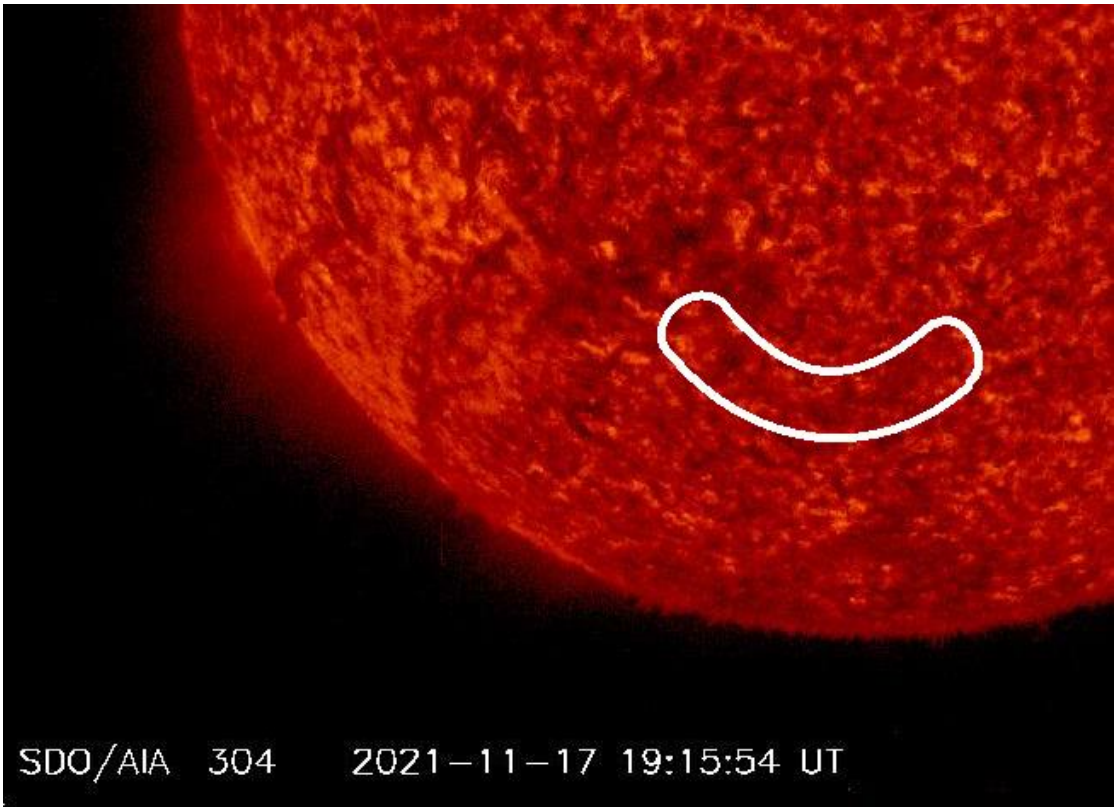

Figure 0: False-colour extreme UV satellite image showing a mobile ‘filament’ (arc of plasma visible as a dark band) late in the UTC day of Wednesday 17 November. There is not yet any evidence of any resulting CME, and it may well have remained anchored to the sun.

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Solar Wind / Geomagnetic Activity: The solar wind has been suggestive of a gradual exit from a recent fast stream of solar wind emanating rom a 'coronal hole'. The solar wind speed gradually fell in the 24 hours, while the number of particles comprising the wind remained within background levels, as did their corresponding magnetic field.

The net result of the above solar wind measures was mainly quiet geomagnetic activity, peaking in the 21-24UTC interval but well below Minor Storm G1.

Energetic Particles / Solar Radiation: No solar radiation storms have been observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be very low, with a daily 10% slight chance of common-class flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs in the current forecast. The geomagnetic forecast otherwise comprises of a continuing exit from the current fast wind; and then the uncertain onset and intensity of subsequent second stream. On balance, geomagnetic activity from the current feature ought to have long peaked, and mainly quiet geomagnetic activity is therefore expected into the UTC weekend. There is considered a chance of Minor Storm G1 arising from the second stream of fast wind's effects, with this most likely starting later on day three, Saturday 20 November, and continuing on Sunday.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	30	40
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	1	1	1	1
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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